Amendments to the Claims

1 – 62 (cancelled)

63. (new) A method of testing or screening a mammal thought to have or to be predisposed to have a neural system disorder comprising detecting the presence of mutation in the NBEA gene or its associated promotor in a sample of said mammal.

64. (new) The method of claim 63, said method comprising: detecting a modification of the NBEA gene or its promotor in the chromosomal material of said sample, wherein said modification is selected from a) substitution, b) deletion, c) frame-shift, d) insertion or e) altered epigenetic control; whereby said modification causes a loss of biological function in the NBEA gene product;

65. (new) The method of claim 64, which further comprises, correlating the mutation of said gene with a potential for a neural system disorder.

66. (new) The method of claim 63, wherein said mutation in the NBEA gene or its promotor is detected by hybridisation with a labelled probe.

67. (new) The method of claim 63, wherein detection of the presence of the mutation in the NBEA gene is achieved by detecting altered levels of the mRNA transcripts or mRNA precursor.

68. (new) The method of claim 63, wherein said mutation is detected by (a) amplification of the chromosomal material using PCR; (b) sequencing said material to detect the modification of the nucleotide sequence; and (c) correlating the modification of said gene with a potential for neural system disorders.

69. (new) The method of claim 63, wherein, said method comprises: (a) detecting the absence, inappropriate, or modified expression of NBEA gene product using labelled ligands to said gene product in said sample; and (b) correlating said absence, inappropriate, or modified expression with a potential for neural system disorders.

70. (new) The method of claim 69, wherein the said ligands are monoclonal or polyclonal antibodies.

71. (new) The method of claim 63, wherein said neural system disorder is autism.

72. (new) The method of claim 63, wherein said neural system disorder is selected from the group consisting of a disorder associated with any or several symptoms consisting of the group disturbed cognitive functions, disturbed emotional control, disturbed in motor control, a disorder resulting from a decreased number of Purkinje cells and a disorder resulting from brain anomalies.

73. (new) The method of claim 63, wherein said neural system disorder results from a disturbed the glutamate neurotransmitter system.

74. (new) The method of claim 63, wherein said neural system disorder results from reduced levels of the anti-apoptotic protein bcl2.

75. (new) The method of claim 63, which comprises hybridising a polynucleotide sequence which is hybridisable with a variant NBEA gene, having a deletion, insertion or base substitution which affects transcription and/or translation of the NBEA gene to the NBEA gene in said sample.

76. (new) A method of preventing or treating a neural system disorder in a mammal, said method comprising administering to said mammal a polynucleotide comprising the NBEA gene, an allelic variant, minigene or an homologue thereof encoding NBEA or an homologue thereof

77. (new) The method of claim 76, wherein the neural system disorder is autism.

78. (new) A method of preventing or treating a neural system disorder in a mammal, said method comprising administering to said mammal a polypeptide comprising NBEA or a fragment thereof.

79. (new) The method of claim 78, wherein a neural system disorder is autism.

80. (new) An isolated polynucleotide comprising a nucleotide sequence, wherein said sequence includes at least one mutation of the NBEA gene, wherein said mutation is selected from a) substitution, b) deletion, c) frame-shift, d) insertion, or e) site-directed mutagenesis that causes a loss of biological function in the NBEA gene.

81. (new) An isolated cell containing the polynucleotide of claim 80.

82. (new) The cell of claim 81, wherein said cell is a neural cell.

83. (new) The neural cell of claim 82, wherein the cell is derived from an immortal cell line, such as embryonic stem cells, neuronal cell line, or tumour derived cell line.

84. (new) The neural cell of claim 82, wherein the NBEA gene is under control of a neural-specific promoter or inducible promoters.

85. (new) A non-human animal containing in its genome the polynucleotide of claim 80.

86. (new) A vector containing the polynucleotide of claim 80.

87. (new) An engineered cell comprising a vector comprising the vector of claim 86.

88. (new) An engineered cell comprising a vector encoding RNAi specific for NBEA mRNA encoded by a heterologues gene relative to the genome of said cell.

89. (new) A method of screening for therapeutic agents suitable to treat autism comprising: (A) providing the engineered cell of claim 87 or 88 or providing a cell containing an isolated polynucleotide comprising a nucleotide sequence, wherein said sequence includes at least one mutation of the NBEA gene, wherein said mutation is selected from a) substitution, b) deletion, c) frame-shift, d) insertion, or e) site-directed mutagenesis that causes a loss of biological function in the NBEA gene; (B) introducing to the cell a agent to be screened; and (C) correlating change in said cell with the activity of the agent.

90. (new) The method of claim 89, wherein said changes in said cell are survival, proliferation, differentiation or outgrowth.

91. (new) The method of claim 89, wherein said changes in said cell are changes the type II protein kinase A phosphorylation pathway.

92. (new) A non-human animal with locoregional neural transgenes, wherein said animal comprises a vector encoding RNAi specific for NBEA mRNA encoded by a heterologues gene relative to the genome of said cell

93. (new) A method of screening for therapeutic agents comprising: (A) providing the non-human animal of claim 85 or the non-human animal of claim 92 (B) introducing to the animal a agent to be screened; and (C) correlating a change in the development of autism.

94. (new) A method of screening for a therapeutic agents suitable to treat autism comprising: (A) providing an engineered yeast cell, comprising an introduced nucleotide sequence comprising NBEA gene or an allelic variant, minigene, a synthetic gene or a homologue thereof; (B) introducing to the cell a compound, chemical signal or agent to be screened; and (C) correlating change in said cell with the activity of the compound, chemical signal or agent.

95. (new) The method of claim 94, which method comprises screening for compounds, chemical signals or agents that directly or indirectly affect the biochemistry of NBEA.